Genetic Similarity Between Nerve Cells in Ear Drum and In Nerves in Ear Canal Linked to Immunological Age-Related Hearing Loss; Direct Exposure of Ear Canal to Oxygen Due to Wax Removal May Indirectly Damage Hearing by Triggering Immune Response

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Introduction

Antigens common both to nerve cells found in the ear drum and nerves in the ear canal that sit near the surface of the tissue are released when fibers are exposed to oxygen due to the displacement of wax either due to deliberate wax removal (in the case of the ear drum) as well as in the tympanic membrane, wherein, in all cases that don't involve ruptures, the chronic damage to hearing is not so much cased by the motion of that membrane, but by the way in which wax is washed away by fluid released in response to the sonic agitation.

Abstract

Once this particular type of nerve is exposed directly to the air, antigens are released from the partial oxidation of the nerve fibers (these nerves, like dental nerves, can be destroyed by long-term oxygen exposure) but like an exposed nerve above a decayed tooth, there is no layer of skin as with most of the nerves of the body to prevent contact with the air.

Where the nerves of the teeth are occluded by a tight-fitting seal created by a healthy tooth, the nerves of the ear canal are protected only by a thin layer of wax. In the case of individuals susceptible to genetic age-related hearing loss, the immune response to this antigen release is more robust and longer in duration than in the case of individuals without the genetic risk factor.

Conclusion

For these susceptible individuals, avoiding loud noises and avoiding wax removal would be highly advisable as the outliers with the gene who do not experience the hearing loss are most likely the individuals who refrain from these things.